WILD LIFE AND ADVENTURE.

Wild Life in Australia. By W. H. D. le Souëf. Pp. xv+439; illustrated. (Christchurch: Whitcombe and Tombs, Ltd.) Price 7*s.* 6*d.* net.

The Life-Story of a Squirrel. By T. C. Bridges. Pp. vii+230; illustrated. (London: A. and C. Black, 1907.) Price 6*s.*

Adventures in the Great Forests. By H. W. G. Hyrst. Pp. 330; illustrated. (London: Seeley and Co., Ltd., 1908.) Price 5*s.*

Heroes of Pioneering. By E. Sanderson. Pp. 352; illustrated. (London: Seeley and Co., Ltd., 1908.) Price 5*s.*

In re-publishing, with considerable additions, the series of natural history articles which originally appeared in the *Victorian Naturalist* and the *Emu,* the author of "Wild Life in Australia" has assuredly been well advised; for within this unassuming little volume is to be found a valuable store of information concerning the animals and plants of various districts in Australia. The province of Victoria, the Riverina district of New South Wales, the islands of Bass Strait, Queensland, and Western Australia are in turn discussed; and in each case the treatment of the subject is full of interest, although the amount of space devoted to each district is by no means large. The most important observations in the book are those relating to the life-history of the duckbill or platypus. Many of our readers will recall that in 1901 Mr. G. Metcalfe, at a meeting of the Zoological Society, denied that the platypus lays eggs. Mr. le Souëf, on the other hand, definitely states that at the end of October the creature lays one or two eggs, which are of elongated form and furnished with a leathery shell. The egg is believed to be soon hatched, and the newly-hatched young is naked, and about one inch in length. A nest and broken eggshell were, according to the author, forwarded to Dr. P. L. Sclater. The point in dispute may now be regarded as settled. Mr. le Souëf adds that the platypus is a good climber, and that when on land it folds inwards the portion of the web projecting beyond the toes, so that the latter may be enabled to obtain a grip of the surface.

So far as the naturalist is concerned, "The Life-Story of a Squirrel" is effectually condemned by the illustrations, which (although of passable excellence from the conventional standard) represent the squirrel as being wholly red above, with long ear-tufts, at all seasons. In the winter scene facing p. 142 the characteristic grey flanks are not shown; while in the plate facing p. 32, which is stated in the text to represent a larch, and must therefore, as the tree is in leaf, indicate summer, the squirrel is likewise shown with ear-tufts and the chestnut tail of winter. The text is not of a nature that commends itself to our taste, or, it may be added, to that of certain young people to whom we have shown the volume. For our own part, we like either a sound book on natural history or a good novel; the attempt to combine the two does not appeal to us.

Of the two remaining volumes mentioned above, a brief notice must suffice, seeing that both are based on more or less well-known stories of travel and adventure or on striking historical events, and appear to be mainly intended for boys. In both instances the authors are to be congratulated on their selections and on the interesting style in which these are placed before the public. In his preface Mr. Hyrst records a protest against the destruction of forests which is proceeding only too rapidly in many parts of the world, quoting a statement to the effect that seven acres of primeval forest are felled to meet the requirements of the paper-maker for a single day's issue of a New York journal. Adventures in the great forests of the world, ranging from Major Stedman's expedition in Surinam in 1772 to the journeys of Speke and Grant, Winwood Reade, and other comparatively modern African explorers, are recorded in a style which should attract all juvenile readers. Mr. Sanderson carries his readers further backwards in time, commencing with Sir Walter Raleigh in Virginia, and continuing his narrative down to the establishment of British supremacy in Rhodesia and Nigeria.

OUR BOOK SHELF.

The Collected Mathematical Works of George William Hill. Vol. iv. Pp. vi+460. (Washington: The Carnegie Institution, 1907.)

The fourth volume of Hill's mathematical works brings the re-publication of these papers up to date, and a little beyond it, for it includes four memoirs that have not appeared elsewhere, and are of very considerable interest. It is, indeed, difficult to overstate the interest of the whole volume—at least, to those occupied in the subjects treated of. Newcomb, in his "Reminiscences," permitted himself a good-natured grumble at Hill's "lack of the teaching faculty." It seems to us that for true instruction as to what the problems of celestial dynamics actually require, and what are the most hopeful ways of approaching them, nothing has appeared since Laplace's "Mécanique Celeste" that so well deserved study as these four volumes. One cannot do them justice in a brief notice. Generally we should say their unique force is a force of character, a serious purpose to adhere only to real problems, to which great analytical facility, with clearness and fastidious elegance, and immeasurable patience are subservient.

Passing over the minor papers, and one of much interest not hitherto published—No. 84, "On Dynamic Geodesy"—the chief part of the volume is engaged in the attempt to find integrals of the planetary equations of motion which shall be valid for an indefinite lapse of time, and so supply some conclusive information as to the permanent future stability, and equally as to the past history of our system. This may be said to be the problem of vital interest at the present time in this branch of astronomy. Construction of tables of the actual motions of the planets is so far perfected that their remaining interest is almost wholly technical. On the other side, if we may take the opinions expressed by Hill in No. 60, "Remarks on the Progress of Celestial Mechanics since the Middle of the Century," the efforts of even very brilliant analysts have not succeeded in throwing much light upon the problem of representing the motions by more general integrals.

Without claiming too much for what Hill himself here contributes, his memoirs are instructive as giving almost a history of the efforts, extending over

© 1907 Nature Publishing Group

many years, of his patient and trenchant mind to effect some real advance. The ideas to which he most recurs are those of Delaunay and Gyldén, to both of which it is evident that he attaches high value.

The paper No. 79, "Integrals of Planetary Motion Suitable for an Indefinite Length of Time," supplies a solution of the problem in outline, but in complete and not in unfinished outline, so far as it is illustrated by the system of Jupiter and Saturn.

The volumes are published by the Carnegie Institution of Washington. Vol. iv. contains an index, but it is of the perfunctory character that makes it little more than a list of names; Delaunay's name is followed by a list of no fewer than eighty-three reference numbers, without other clue; it would be shorter and equally useful to write DELAUNAY—*passim*.

R. A. S.

Stray Leaves and Some Fruit on Cancer, based upon Physiologic Chemical Principles. By Henry D. McCulloch. Pp. 49+3. (London: John Bale, Sons and Danielsson, Ltd., 1907.)

THE title of Dr. McCulloch's book is original, and there is no doubt as to the "stray leaves," but in our opinion there is very little "fruit," and we find very little of either "physiologic" or "chemical" principles in the foundation of the heterogeneous collection of quotations which form the bulk of the book—if, indeed, it can be said to have any foundation whatever.

In the present state of the cancer question, such undigested material can only be another obstacle to the real study of this most difficult of problems. A particular form of protozoal infection is assumed without any proof, or mention of work on this theory, as the cause of cancer; and the author thinks that "by proper culture, and introduction to the leucocyte, a vaccine or perfect remedial agent, vicariously prepared in a living animal, will be possible."

Dr. McCulloch makes an attempt to explain the *rôle* of the leucocyte in the natural production of specific vaccines in cancer. Certain leucocytes being phagocytes eat up the opsonised microorganisms under certain conditions, and return to the lymphatic glands and there degenerate; their remains are propelled to the "gland reservoir," where a chemical dissociation and rearrangement of their constituents is brought about, and are finally converted into the immunising agent. This occurs in the early stages of cancer, which are not recognisable. When these conditions fail, the leucocytes perform segregation, and hence the metastasis in the cancer growth.

The dissociation and rearrangement which occur, according to the author, are said to be brought about by enzymes. No doubt these play a part in the process, and it might have been thought that the author would have made an attempt to try to isolate them, or, at any rate, determine what enzymes were present. The assumption of an enzyme is not sufficient proof for its presence, since enzymes are specific in their actions, by which means they are identified. A "nascent enzyme" has not yet been described. The author has also introduced "hormone" in the hope that the word may help to explain the unknown.

The presence of so many quotations might have included the following, by a distinguished physiological chemist:—"The less a physiologist knows about chemistry, the greater is his inclination to work at the most difficult chemical subjects—the proteins and ferments. If even this subject be not sufficiently obscure to him, he can study the phenomena of coagulation. He feels most at home in the still more obscure subject of the pathology of coagulation and of the ferments; it is good to fish in the dark! *These authors have built up a literature which no one can become master of, and which is only a drag and a brake to science.*"

In this book of quotations, Dr. McCulloch finishes up with one in Sanskrit, of which he gives a voluminous interpretation, which appears to have even less to do with cancer than many of the many others of which the book is made up.

R. H. A. P.

Helianthemum Canum (L) Baumg. und seine nächsten Verwandten. By Dr. E. Janchen. Pp. 68. (Jena: Gustav Fischer, 1907.) Price 2.50 marks.

Helianthemum canum is a highly variable species, and therefore one for which it is difficult to define the limits. In the volume of Engler's "Pflanzenreich," dealing with the Cistaceæ, Dr. W. Grosser differentiates two varieties that are each again subdivided into several forms. The herbarium worker may follow such a splitting of interrelated forms, but it is extremely unlikely that he could separate them in the field where intermediate forms would probably be found. Dr. Janchen puts forward an alternative limitation of *Helianthemum canum*, and one or two nearly related species. Broadly, he merges in *canum* part of the species recognised by Grosser as *marifolium*, and maintains *italicum* and *rupifragum* as independent species. There appears to be considerable support for Janchen's arrangement, and the adoption by Grosser of two varieties under different species as *H. canum v. marifolium* and *H. marifolium v. canum* is decidedly confusing, but the determinations of Dr. Janchen are also based solely on herbarium material, although a crucial test could be obtained either by a study of the plants as they grow or by cultivating them from seed. Undoubtedly, such methods are arduous but not impossible, as all the plants under discussion are European. It is only right to add that Dr. Janchen himself recognises the necessity for determining the systematic limits in such variable species by the methods indicated.

Limnologia: Studio Scientifico dei Laghi. By Dr. G. P. Magrini. Pp. xv+242; illustrated. (Milan: U. Hoepli, 1907.) Price 3 lire.

THIS valuable little work forms Nos. 372–373 of Hoepli's well-known scientific series of manuals. As the title implies, it deals entirely with the phenomena of lakes, and is intended to be preliminary to a somewhat similar work on the much larger subject of oceanography. Limnology owes its name to Prof. F. A. Forel, whose standard monograph on the Lake of Geneva is recognised as a model in this branch of inquiry. The present volume deals more particularly with the geographical and physical sides of the question, touching but very lightly on the more difficult subject of biology; it summarises the methods of observation which experience has shown to be the best, including descriptions of the instruments used, the improvements recently introduced in them, and the principal results hitherto obtained. The occurrences of *seiches* are attributed partly to the sudden cessation of wind which had been previously blowing over the lake, and partly to small differences of pressure at various points of the lake (acting on the water as on the mercury of a barometer); it is, however, pointed out that although it may be possible to indicate some of the causes that produce *seiches*, it is very rare that the particular cause of any individual *seiche* can be precisely determined. An appendix contains a list of the positions and areas of the principal Italian lakes. The author admits his especial indebtedness to Profs. Forel and Delebecque, to whose works, and to those of Prof. Chrystal and others, frequent references are made in the compilation of this useful manual.

© 1907 Nature Publishing Group